SmartSwitch 9000
9F241-12
User's Guide

9031203-01

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The Complete Networking Solution™

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DECLARATION OF CONFORMITY ADDENDUM

Application of Council Directive(s):	**89/336/EEC** **73/23/EEC**
Manufacturer's Name:	**Cabletron Systems, Inc.**
Manufacturer's Address:	**35 Industrial Way** **PO Box 5005** **Rochester, NH 03867**
European Representative Name:	**Mr. J. Solari**
European Representative Address:	**Cabletron Systems Limited** **Nexus House, Newbury Business Park** **London Road, Newbury** **Berkshire RG13 2PZ, England**
Conformance to Directive(s)/Product Standards:	**EC Directive 89/336/EEC** **EC Directive 73/23/EEC** **EN 55022** **EN 50082-1** **EN 60950**
Equipment Type/Environment:	**Networking Equipment, for use in a** Commercial or Light **Industrial Environment.**

We the undersigned, hereby declare, under our sole responsibility, that the equipment packaged with this notice conforms to the above directives.

Manufacturer	Legal Representative in Europe
Mr. Ronald Fotino	Mr. J. Solari
Full Name	Full Name
Principal Compliance Engineer	Managing Director - E.M.E.A.
Title	Title
Rochester, NH, USA	Newbury, Berkshire, England
Location	Location

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Chapter 1

Introduction

The 9F241-12 MicroLAN™ Module is a Dual Attached Concentrator module for the SmartSwitch 9000 (see Figure 1-1). The 9F241-12 provides twelve multimode fiber Master ports allowing the connection of Single or Dual Attached Stations. The 9F241-12 is ANSI FDDI-compliant with SMT (version 7.3), MAC, PHY, and PMD. This module attaches directly to the SmartSwitch 9000 FNB backplane, delivering up to 400 Mbps of bandwidth. The 9F241-12 module uses the Intel i960 microprocessor for all SMT and local / remote SNMP management functions.

Features

Processor

The 9F241-12 is equipped with an advanced Intel i960 microprocessor. This microprocessor provides a platform for all management functions within a scalable RISC-based architecture.

Management

Management features include the following:

- Module insert / bypass control
- MAC placement
- MAC level and network level statistics
- An FDDI station list
- Individual Master port assignments
- FDDI Bandwidth Utilization Statistics

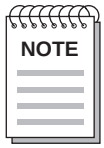
Connectivity

The front panel Master port connections are via standard multimode fiber SC-type connectors. Multiple modules can be combined to provide connections for up to 168 FDDI stations. All FDDI stations connected to the Master ports are directly attached to the FNB backplane. These ports are not bridged or routed to the FNB backplane.

Management Information Base (MIB) Support

The 9F241-12 provides MIB support, including the following:

- IETF FDDI MIB
- IETF MIB II
- a host of Cabletron Enterprise MIBs.



For a complete list of supported MIBs, refer to the release notes provided in the concentrator modules package.

LANVIEW LEDs

The 9F241-12 uses LANVIEW, the Cabletron Systems built-in visual diagnostic and status monitoring system. With LANVIEW LEDs, you can quickly identify the device, port, and physical layer status at a glance.

Hot Swapping

The 9F241-12 can be installed or removed from the chassis while the SmartSwitch 9000 is powered up, without affecting the operation of the rest of the network.

Figure 1-1. The 9F241-12 module

Related Manuals

The manuals listed below should be used to supplement the procedures and technical data contained in this manual.

SmartSwitch 9000 Installation Guide
SmartSwitch 9000 Operations Guide
SmartSwitch 9000 9C300-1 Environmental Module User's Guide
SmartSwitch 9000 9C214-1 AC Power Supply User's Guide
SmartSwitch 9000 Module Local Management User's Guide
Local Management Appendix for the 9F241-12 Module

Getting Help

For additional support related to this device or document, contact the Cabletron Systems Global Call Center:

Phone	(603) 332-9400
Internet mail	support@ctron.com
FTP Login Password	ctron.com (134.141.197.25) *anonymous* *your email address*
BBS Modem setting	(603) 335-3358 8N1: 8 data bits, No parity, 1 stop bit
For additional information about Cabletron Systems or its products, visit the World Wide Web site: **http://www.cabletron.com/** For technical support, select **Service and Support**.	
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Before calling the Cabletron Systems Global Call Center, have the following information ready:

- Your Cabletron Systems service contract number
- A description of the failure
- A description of any action(s) already taken to resolve the problem (e.g., changing mode switches, rebooting the unit, etc.)
- The serial and revision numbers of all involved Cabletron Systems products in the network
- A description of your network environment (layout, cable type, etc.)
- Network load and frame size at the time of trouble (if known)
- The device history (i.e., have you returned the device before, is this a recurring problem, etc.)
- Any previous Return Material Authorization (RMA) numbers

Chapter 2

Installing the MicroLAN Module

This section describes how to unpack, configure and install the module into the SmartSwitch 9000 chassis.

Unpacking the Module

1. Carefully remove the module from the shipping box. (Save the box and packing materials in the event the module must be reshipped.)
2. Remove the module from the plastic bag. Observe all precautions to prevent damage from Electrostatic Discharge (ESD).
3. Carefully examine the module, checking for damage. If any damage exists, DO NOT install the module. Contact Cabletron Systems Technical Support immediately.

User-Accessible Components

Figure 2-1 shows the various components that are accessible to the user. These consist of an eight-position dip switch (explained in the next section), replaceable PROMs and sockets for RAM. These will be used for future upgrades. Instructions for installing the components will be supplied with the upgrade kit.

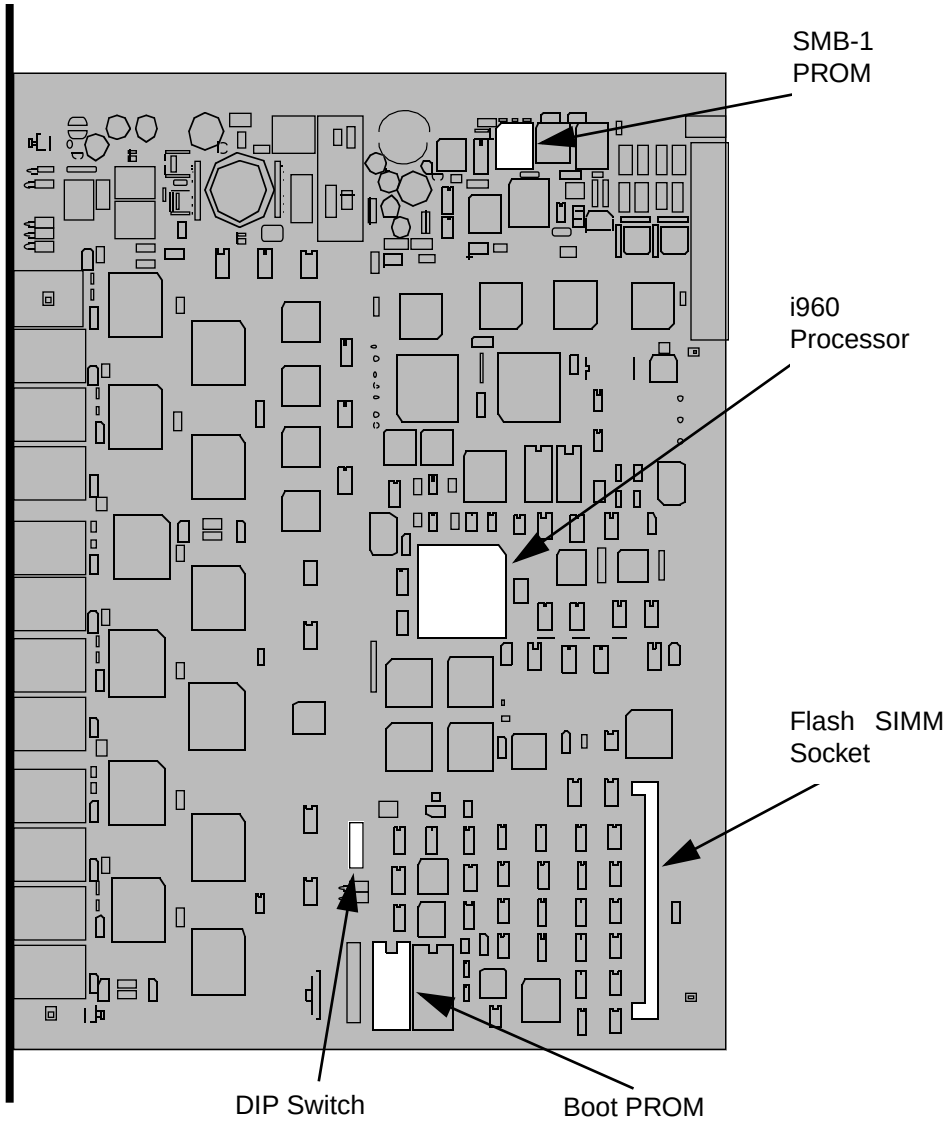


Figure 2-1. User-Accessible Components

Setting the Module Card DIP Switch

An eight-position DIP switch is located on the module card, as shown in Figure 2-1 and Figure 2-2. The functions of the switches are listed in Table 2-1.

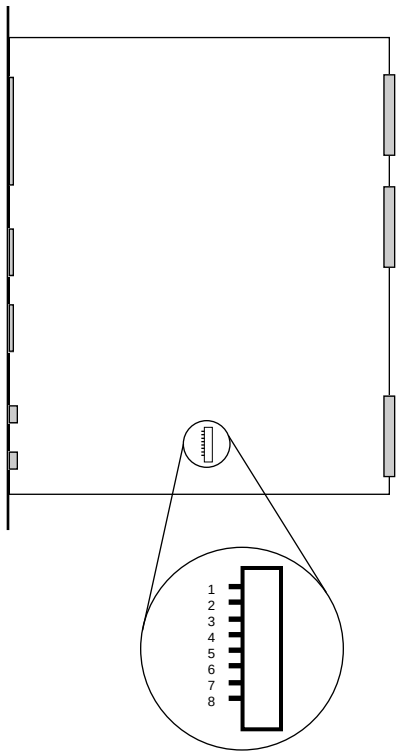


Figure 2-2. Location of Module DIP Switch

See the **Cautions** at the end of this table.

Table 2-1. Function of DIP Switch

Switch	Function	Description
8	**Clear Password [1]**	When toggled, this switch clears user-entered passwords stored in NVRAM, and restores the default passwords. Once reset you can use the defaults or enter new passwords.
7	**Clear NVRAM [2]**	The module uses NVRAM to store user-entered parameters such as IP addresses, device name, etc. To reset these parameters to the factory defaults, toggle this switch. Once reset, you can use the defaults or enter new parameters, which are stored in NVRAM when the module is powered down, and remain there until the switch is toggled again.
6	**Force BootP Download**	Toggling this switch after pulling the board out of the SmartSwitch 9000 clears download information from NVRAM and forces image files to be downloaded from the station configured to act as that module's BootP server.
5	**Reserved**	For Factory Use Only
4	**Reserved**	For Factory Use Only
3	**Reserved**	For Factory Use Only
2	**Reserved**	For Factory Use Only
1	**Reserved**	For Factory Use Only

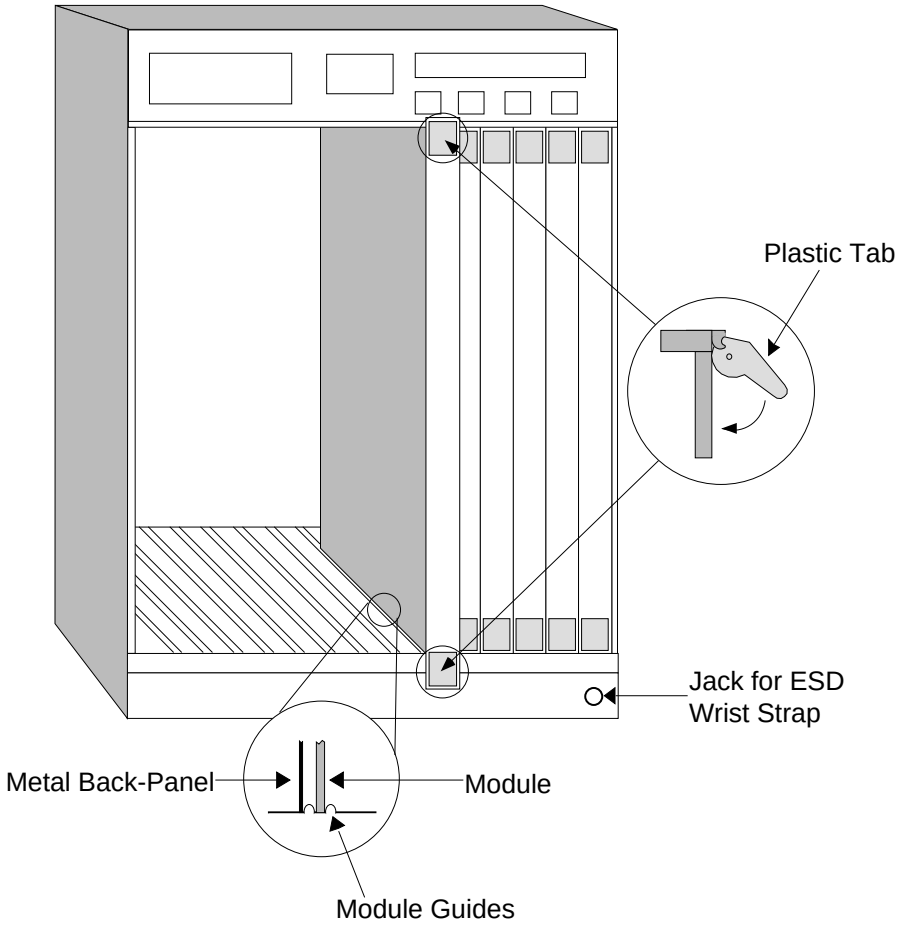
[1]Caution: *Do not toggle Switch 8 unless you intend to reset the user-configured passwords to their factory default settings.*

[2]Caution: *Do not toggle Switch 7 unless you intend to reset the user parameters to the factory default settings.*

Installing the Module into the SmartSwitch 9000 Chassis

SmartSwitch 9000 MicroLAN Modules can be installed in any of the 14 slots that are available. To install, follow the steps below:

1. Switch off the power supplies and remove all power from the SmartSwitch 9000 chassis.
2. Remove the blank panels, covering the slots that the module is being mounted in. All other slots must be covered, if modules are not being installed, to ensure proper airflow and cooling.
3. Attach one end of the ESD wrist strap packaged with the SmartSwitch 9000 chassis to your wrist. Plug the other end into the ESD Wrist Strap Grounding receptacle in the lower right corner of the SmartSwitch 9000 Chassis shown in Figure 2-3.
4. Slide the module into a slot and lock down both the top and bottom plastic tabs, as shown in Figure 2-3. Take care that the module slides in straight and engages the backplane connectors properly.



Warning:

Ensure that the circuit card is between the card guides.

Lock down the top and bottom plastic tabs at the same time, applying even pressure.

Figure 2-3. Installing the SmartSwitch 9000 Module

The Reset Switch

The Reset switch is located on the front panel, under the top plastic tab, as shown in Figure 2-4. It serves two functions:

- Pressing the Reset switch twice within three seconds causes the processor (i960) to reset.
- Pressing and holding the switch on for three or more seconds causes the module to shutdown. Pressing and holding it again for three seconds restarts the module.

SNMP management may be used to disable this switch to enhance module security.

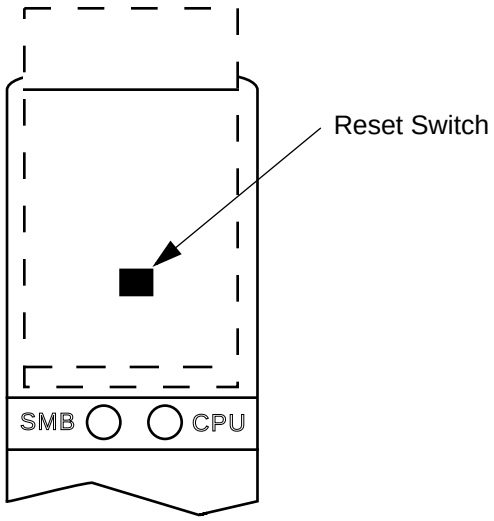


Figure 2-4. The Reset Switch

Chapter 3

Operation

The 9F241-12 module, as shown in Figure 3-1, provides concentrator ports that connect directly to the FNB bus. Each port can connect to either ring (FNB-1 or FNB-2). This is software configurable via local or remote management.

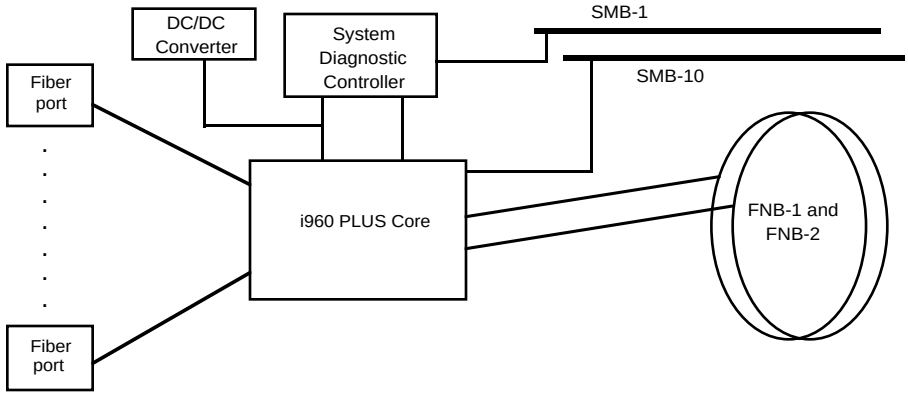


Figure 3-1. Block Diagram

Flexible Network Bus (FNB)

The FNB consists of two dual FDDI networks, FNB-1 and FNB-2, providing up to 400 Mbps of data bandwidth. These FDDI networks are 100% ANSI FDDI-compliant, supporting SMT (version 7.3), MAC, PHY, and PMD standards. This allows the FNB to traverse multiple SmartSwitch 9000 hubs, or connect to any ANSI FDDI-compliant device.

System Management Buses

There are two management channels within the SmartSwitch 9000 system: the SMB-1 and the SMB-10. These buses provide out-of-band management and inter-module management communication.

SMB-1 Bus

The SMB-1 is a 1 Mbps management bus located within the SmartSwitch 9000. This bus is utilized by all diagnostic controllers in the system including connectivity modules, power supply modules and the environmental module. The SMB-1 transports inter-chassis information between system components, such as power and environmental information, as well as diagnostic messages. Periodic loop-back tests are performed by all modules that share this bus to ensure the validity of SMB-1. In the event a failure is detected on SMB-1, the SMB-10 may be used as an alternate communication channel.

SMB-10 Bus

The SMB-10 is a 10 Mbps management bus located within the SmartSwitch 9000 that is also used for inter-chassis communication of modules, as well as serving as an out-of-band management channel into the SmartSwitch 9000. The SMB-10 is externalized from the chassis via an optional Ethernet Port Interface Module (EPIM) located on the front of the Environmental Module. Through an EPIM connection, full SNMP management of the SmartSwitch 9000 is available out-of-band from user data. Modules that share the SMB-10 bus periodically send out loop-back packets to ensure the validity of SMB-10. In the event a fault is detected on the SMB-10, the SMB-1 can be used as an alternate communication channel by the modules.

System Diagnostic Controller

This diagnostic controller is composed of a Z-80 microprocessor and its supporting logic. The diagnostic controller is designed to control the power-up sequencing of modules, monitor the concentrator modules input and output power parameters, keep watch over the main host processor, as well as monitor the temperature and control the SMB LANVIEW diagnostic LED. Although the diagnostic controller and the main host processor can operate independently of each other if needed, they exchange information about each others' status and overall module condition. The information gathered by the diagnostic controller is available to the network manager via local / remote management and the LCD located on the Environmental Module. The concentrator modules have been designed so that in the event of a diagnostic controller fault, the concentrator modules will continue to function.

DC/DC Converter

The DC / DC converter converts the 48 VDC on the system power bus to the necessary operating voltages for its host network services module. The diagnostic controller monitors and controls the operation of the DC / DC converter.

FNB Interface

SmartSwitch 9000 modules are designed with one of two attachment policies. One allows dual attachment of a module to either FNB-1 or FNB-2; the second allows dual attachment to both FNB-1 and FNB-2. The 9F241-12 module has a dual attachment to the FNB backplane, connecting to both FNB-1 and FNB-2. The module can insert into the FNB or bypass it. These flexible configuration options make the SmartSwitch 9000 ideal for networks designed to Bridge / Route multiple lower speed LANs to FDDI and / or networks designed using an FDDI collapsed backbone.

i960 Core

The i960 core provides the SNMP protocol stacks, as well as support for industry-standard MIBs. Additionally, Cabletron enterprise-extension MIBs are supported for each media type. Advanced management services, such as the Distributed LAN Monitor, telnet and network address to MAC address mapping, are also provided by the i960 core.

Chapter 4

LANVIEW LEDs

The front panel LANVIEW LEDs indicate the status of the module and may be used as an aid in troubleshooting. Shown in Figure 4-1 is the LANVIEW LEDs of the concentrator modules.

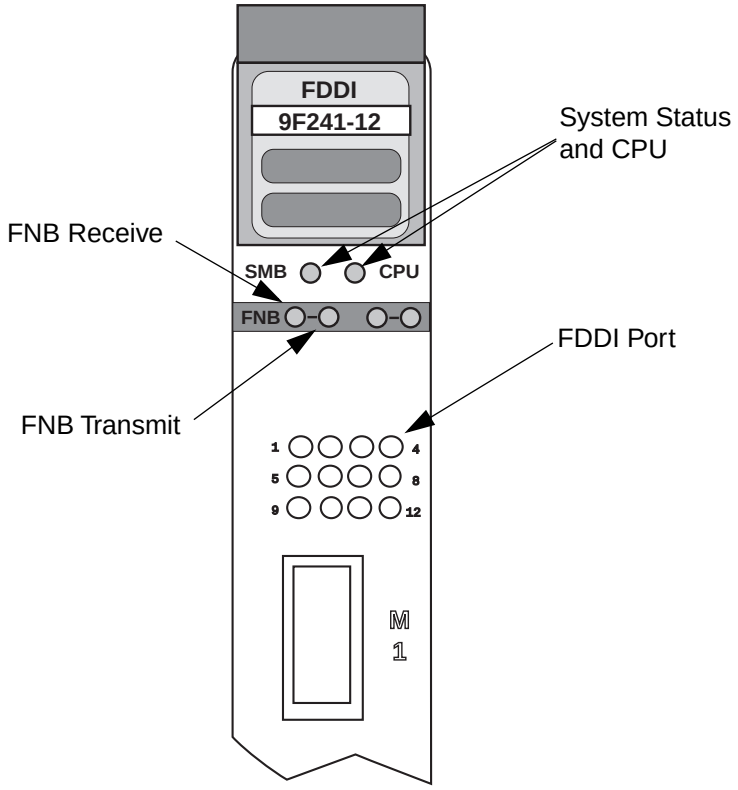


Figure 4-1. The LANVIEW LEDs

The functions of the System Management Bus (SMB) and the CPU LEDs are listed in Table 4-1.

Table 4-1. SMB and CPU LEDs

LED Color	State	Description
Green	Functional	Fully operational.
Yellow	Crippled	Not fully operational (i.e., one bad port).
Yellow / Green	Booting	Blinks yellow and green while booting.
Red	Reset	Normal power-up reset.
Red (Flashing)	Failed	Fatal error has occurred.
Off	Power off	Module powered off.

The functions of the FNB Receive LEDs are listed in Table 4-2.

Table 4-2. FNB Receive LED

LED Color	State
Yellow (Flashing)	Activity
Off	No activity

The functions of the FNB Transmit LEDs are listed in Table 4-2.

Table 4-3. FNB Transmit LED

LED Color	State
Green (Flashing)	Activity
Off	No activity

There is one FDDI Port LED for each Master port. The functions of the FDDI Port LEDs are listed in Table 4-4.

Table 4-4. FDDI Status LEDs

LED Color	State
Green	Link, Activity, Port enabled
Yellow	Link, No Activity, Port enabled
Red	No link, Port disabled
Red (Flashing)	Link, Port disabled
Off	No link, No activity, Port enabled

Chapter 5

Specifications

Safety

It is the responsibility of the person who sells the system to which the module will be a part to ensure that the total system meets allowed limits of conducted and radiated emissions.

This equipment meets the following safety requirements:

- UL 1950
- CSA C22.2 No. 950
- EN 60950
- IEC 950
- EMI Requirements of FCC Part 15 Class A
- EN 55022 Class A
- VCCI Class I
- EMC the following requirements:

  EN 50082-1
  IEC 801-2 ESD
  IEC 801-3 Radiated susceptibility
  IEC 801-4 EFT

Service

MTBF (MHBK-217E):	>200,000 hrs.
MTTR:	<0.5 hr.

Physical

Dimensions:

35.0 D x 44.0 H x 3.0 W centimeters
(13.8 D x 17.4 H x 1.2 W inches)

Weight:

Unit:	1360.7 gr. (3 lb)
Shipping:	1814.4 gr. (4 lb)

Link Distance

Up to two kilometers on multimode fiber-optic cable as specified by ANSI MMF-PMD, using SC connectors specified by ANSI LCF-PMD.